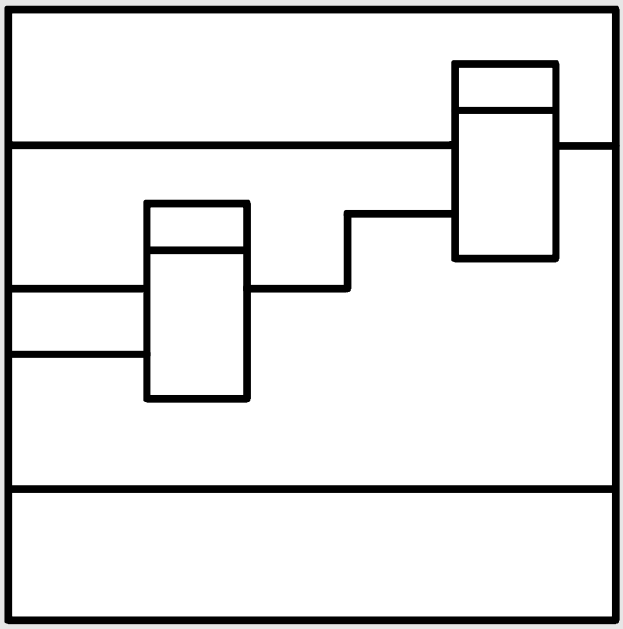
SIMADYN D
Digital Control System

User Manual

Fiber-Optic Rack Coupling
CS13



Edition 05.95

DK No. 237742

User Manual, Fiber-Optic Rack Coupling CS13

Edition		Status
1	Fiber-Optic Rack Coupling CS13	05.95

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We have checked the contents of this Manual to ensure that they coincide with the described hardware and software. However, deviations cannot be completely ruled-out, so we cannot guarantee complete conformance. However, the information in this document is regularly checked and the necessary corrections included in subsequent editions. We are thankful for any recommendations or suggestions.

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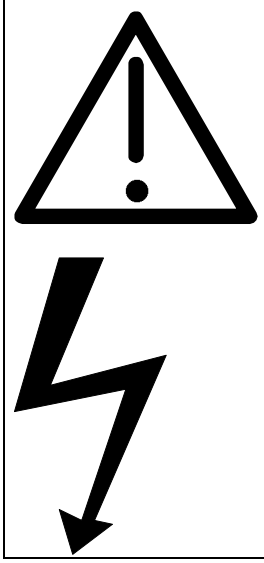
N O T E !

The information in this Manual does not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, please contact your local Siemens office.

Further, the contents of this Manual shall not become a part of or modify any prior or existing agreement, committment or relationship. The sales contract contains the entire obligation of Siemens. The warranty contained in the contract between the parties is the sole warranty of Siemens. Any statements contained herein do not create new warranties nor modify the existing warranty.

Warning information



W A R N I N G !

Electrical equipment has components which are at dangerous voltage levels.

If these instructions are not strictly adhered to, this can result in severe bodily injury and material damage.

Only appropriately qualified personnel may work on this equipment or in its vicinity.

This personnel must be completely knowledgeable about all the warnings and service measures according to this User Manual.

The successful and safe operation of this equipment is dependent on proper handling, installation, operation and maintenance.

Definitions

* **QUALIFIED PERSONNEL**

For the purpose of this User Manual and product labels, a „Qualified person“ is someone who is familiar with the installation, mounting, start-up and operation of the equipment and the hazards involved. He or she must have the following qualifications:

1. Trained and authorized to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety procedures.
2. Trained in the proper care and use of protective equipment in accordance with established safety procedures.
3. Trained in rendering first aid.

* **DANGER**

For the purpose of this User Manual and product labels, „Danger“ indicates death, severe personal injury and/or substantial property damage will result if proper precautions are not taken.

* **WARNING**

For the purpose of this User Manual and product labels, „Warning“ indicates death, severe personal injury or property damage can result if proper precautions are not taken.

* **CAUTION**

For the purpose of this User Manual and product labels, „Caution“ indicates that minor personal injury or material damage can result if proper precautions are not taken.

* **NOTE**

For the purpose of this User Manual, „Note“ indicates information about the product or the respective part of the User Manual which is essential to highlight.

C A U T I O N !

This board contains components which can be destroyed by electrostatic discharge. Prior to touching any electronics board, your body must be electrically discharged. This can be simply done by touching a conductive, grounded object immediately beforehand (e.g. bare metal cabinet components, socket protective conductor contact).

W A R N I N G !

Hazardous voltages are present in this electrical equipment during operation.

Non-observance of the safety instructions can result in severe personal injury or property damage.

It is especially important that the warning information in all of the relevant Operating Instructions are strictly observed.

1. Ordering information

CS13: 6DD1660-0BB0	Fiber-optic rack coupling CS13

2. Description

The CS13 communications board is the master board for the rack coupling via fiber-optic cable to connect a maximum of four CS22 slave boards. It consists of the CS12 basic board and the ICS1 expansion board which is plugged and screwed onto the CS12 board. The four send- and receive channels of the expansion board are interfaced with the memory of the CS12 through a parallel interface.

The fiber-optic cables from the slave boards are inserted at the send- and receive channels of the expansion board. The interface on the CS12 is disabled.

Data transfer between the processor boards and the CS13 memory is realized through the C bus. Thus, it can only be used in subracks with L- and C buses.

The basic CS12 board has a memory which can be accessed by all partners. The maximum memory size is 128 kbyte. There is arbitration between the individual nodes so that only one coupling partner can access the memory at any one time.

The ICS1 does not have a connection to the backplane bus. The complete supply is realized through the parallel interface.

The subrack with the CS13 can be considered as master in the system. The base sampling time and alarm interrupt are transferred to the connected slave boards via the CS13. Thus, slave boards can be synchronized.

3. Board design

The board provides the following hardware components:

Communications bus connection (C bus, X1)
Local bus connection (L bus, X2)
Eight fiber-optic cable connections to the CS22 slave board (X5 to X12)
128 kbyte memory
It transfers the base sampling time and alarm interrupt from the C bus to the slave boards.
Diagnostics interface for the logic analyzer on the basic board and expansion board

4. Interfaces

4.1. Backplane bus connection

The connection to the subrack backplane buses is established via the 96-pin plug connector at slots X1 and X2. The connection for the data-, address- and control bus as well as the +5 V power supply is realized through connector X1, and the power supply signals as well as the +5 V and +15 V power supply, via connector X2.

4.2. Parallel interface to the CS12 basic board

The connection to the CS12 basic board is realized through the 96-pin socket connector X3. In addition to the data-, address- and control bus, the +5 V and +15 V power supplies are also realized through this connection.

4.3. Diagnostic interface

When a fault occurs, a logic analyzer can be connected-up through the 50-pin plug connector X4 on the CS12 and ICS1 in order to simplify troubleshooting.

The interface is exclusively used to connect-up the logic analyzer and it may not be used for any other purpose.

4.4. Fiber-optic cables

The fiber-optic cables to the CS22 are inserted at plug connectors X5 to X12 on the front panel of the expansion board.

Glass fiber-optic cables are used. They use glass fibers, fiber type 62.5/125µm (core diameter/sheath diameter). ST plug connectors are used.

The connection between the CS13 and CS22 boards is realized according to the following table:

Connector on the expansion board	Slave boards			
	1	2	3	4
X5	X6			
X6	X5			
X7		X6		
X8		X5		
X9			X6	
X10			X5	
X11				X6
X12				X5

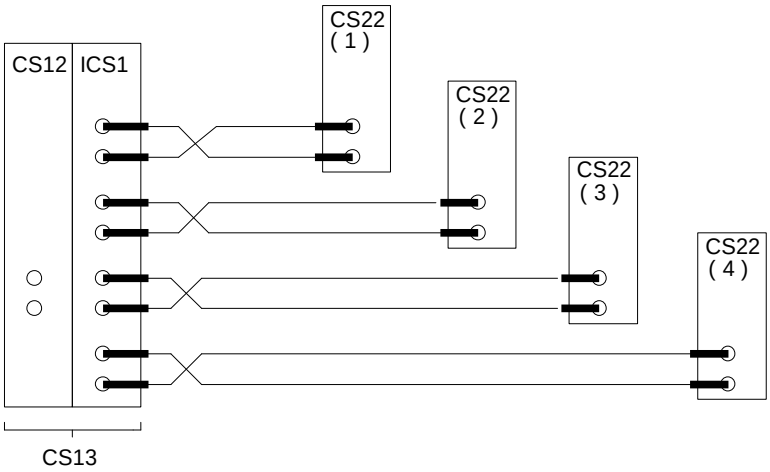


Fig. 1: Fiber-optic connection between a CS13 and four CS22 boards

The fiber-optic cables can be ordered as pre-assembled cables from the Siemens Automation Group. For more detailed information regarding the ordering data, refer to Catalog „SINEC Industrial Communication Networks, Catalog IK10.1993“

The maximum cable length between the master- and slave board is 500 m.

5. Application information

The board can be used in pure 32-bit systems and in mixed 16-bit- and 32-bit systems and in pure 16-bit systems.

Using a connector in the master program board mask, it is specified whether the memory is in the extended address range or in the special periphery range. The memory is pre-set in the extended address range.

Memory range	Memory size	Entry at the EMA connector
Extended address range	128 kbyte	Y
Special peripheral range	32 kbyte	N

When configuring the board, it should be observed that the entry at the CS13 EMA connector and the associated CS22 EMA connector are the same. If the entry is different, at start-up, a communications error will occur. This error is not identified when the master program is compiled.

If a fiber-optic cable is not inserted, the transmit- and receive modules must be protected using caps.

When equipping the subrack, it should be taken into account that the expansion board has no connection to the backplane bus. If required, daisy chain jumpers must be provided at the backplane bus connectors.

The board must be screwed tightly into the subrack to ensure perfect operation, even during start-up.

If the board is inserted in an adapter, the front panel must be connected with the frame housing through a short cable.

It is not permissible that the board is inserted or withdrawn under voltage.

6. Additional components

Designation	Order No.
CS22 slave board	6DD1660-0BD0

7. Technical data

INSULATION GROUP	A acc. to VDE 0110 Para. 13, Group 2 at 24 V DC, 15 V DC, 5 V DC
AMBIENT TEMPERATURE	0 to +55 degrees, self-ventilated
STORAGE TEMPERATURE	-40 to + 70 degrees C
HUMIDITY RATING	F acc. to DIN 40040
ALTITUDE RATING	S acc. to DIN 40040
MECHANICAL STRESSING	Installed in stationary but not necessarily vibration-free equipment
PACKAGING SYSTEM	ES 902 C
DIMENSIONS	220 * 233.4 mm
BOARD WIDTH	2 slots in the subrack
WEIGHT	0.8 kg
CURRENT DRAIN	P5 1.4 A P15 100 mA

8. STRUC L mask of the CS13 board in the master program

```
100              :CS13                "Fiber-optic rack coupling, CS13, C-bus"
101   EMA        1C = Y               "Only P32 access permitted    ( Y / N )"
102    ********************************************************************************
```

9. Others

9.1. Attachments

9.1.1. Block diagram

Block diagram Fig. 2

9.1.2. Dimension drawing

Dimension drawing 3SE.465 660.9011.00 MB

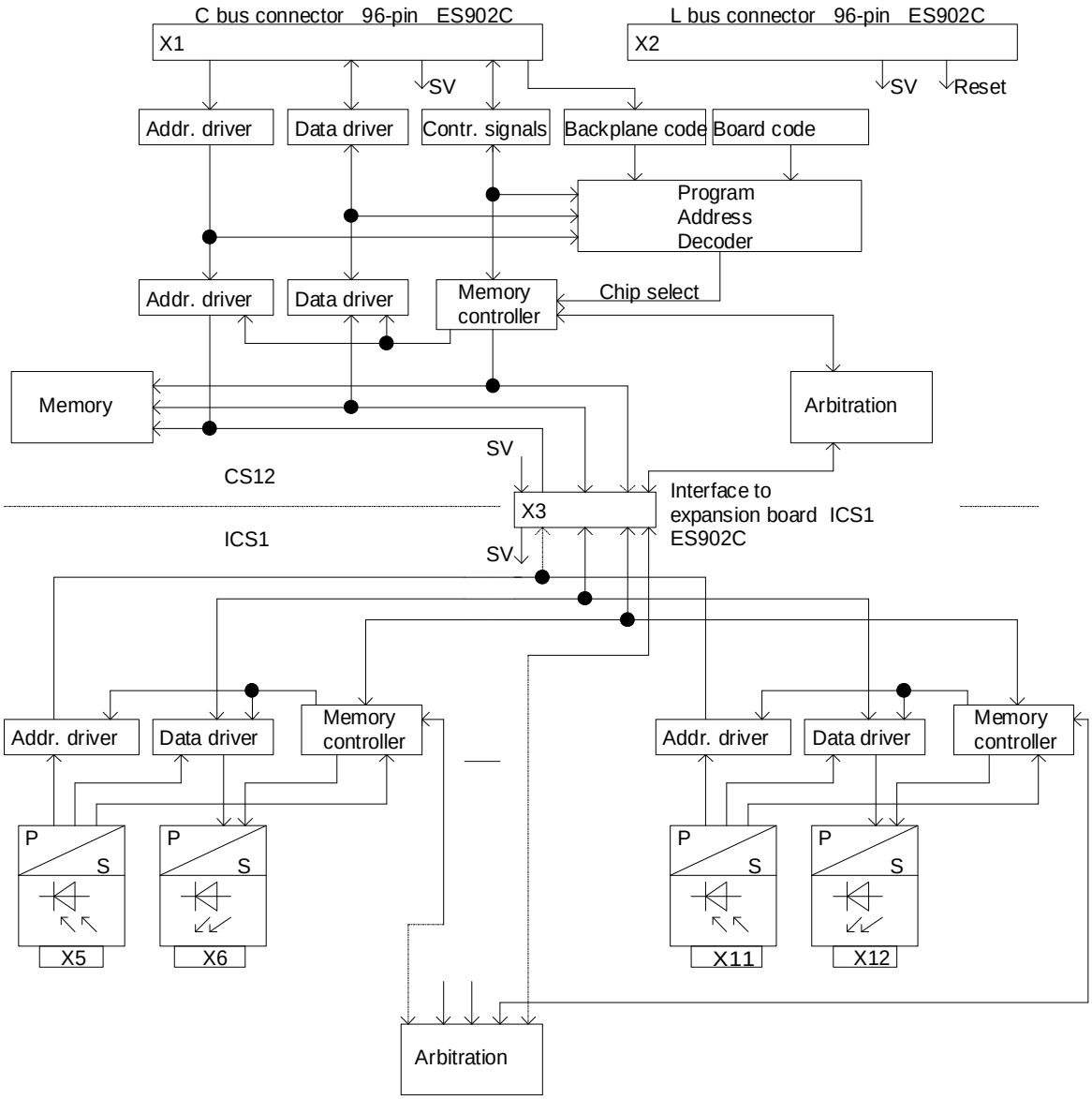


Fig. 2: Block diagram, CS13

10. ESD instructions

Components which can be destroyed by electrostatic discharge (ESD)

Generally, electronic boards should only be touched when absolutely necessary.

The human body must be electrically discharged before touching an electronics board. This can be simply done by touching a conductive, grounded object directly beforehand (e.g. bare metal cubicle components, socket outlet protective conductor contact).

Boards must not come into contact with highly-insulating materials - e.g. plastic foils, insulated desktops, articles of clothing manufactured from man-made fibers.

Boards must only be placed on conductive surfaces.

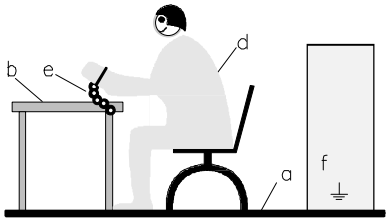
When soldering, the soldering iron tip must be grounded.

Boards and components should only be stored and transported in conductive packaging (e.g. metalized plastic boxes, metal containers).

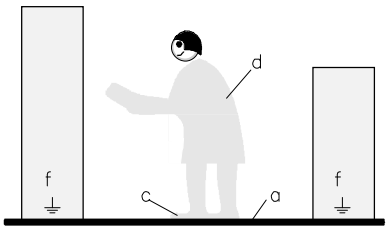
If the packing material is not conductive, the boards must be wrapped with a conductive packing material, e.g. conductive foam rubber or household aluminum foil.

The necessary ESD protective measures are clearly shown in the following diagram.

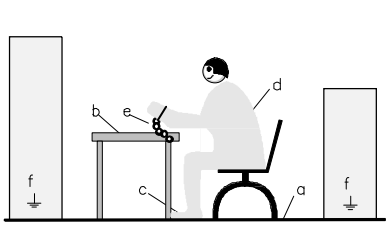
a = Conductive floor surface
b = ESD table
c = ESD shoes
d = ESD overall
e = ESD chain
f = Cabinet ground connection



Seated

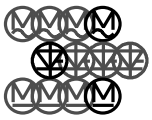


Standing



Standing / sitting

Drives and Standard Products
Motors and Drive Systems Group
Postfach 3269, D-91050 Erlangen



System-Based
Drive
Technology